M1 and Inflation - Predicing CPI

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Outline

Historical Examples of Inflation and Debasement

- Roman Empire
- Spain 1597
- French Revolution
- Germany 1920's
- Yugoslavia 1990's

Gresham's Law: "Bad money drives out good money."
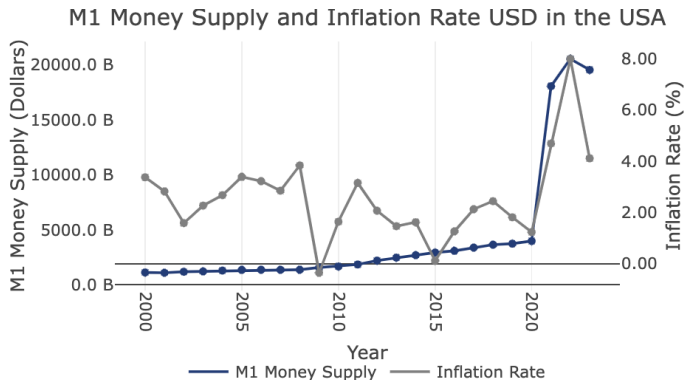
Modern Example

Figure: M1 Money Supply and the Inflation Rate

Goal and Method

Goal: Try to Predict Inflation for 60-Months (5-Years)

- **Method Used**
  - VAR (Vector Autoregression)

Data

The data used in this report was acquired from *fredR*

- **US Urban CPI:** series_id = "CPIAUCSL"
- **US M1:** series_id = "M1NS"
- **UK Total CPI:** series_id = "GBRCPIALLMINMEI"
- **UK M1:** series_id = "MANMM101GBM189S"

Method: VAR

- The **Vector Autoregression (VAR)** is a multivariate time series model used to capture the linear interdependencies among multiple time series.
- Key Features:
  - *Multivariate:* Handles two or more time series simultaneously.
  - *Symmetric:* All variables are treated as endogenous, meaning each variable can influence and be influenced by others.
  - *Lagged Relationships:* Incorporates lagged values of the variables to capture temporal dependencies.
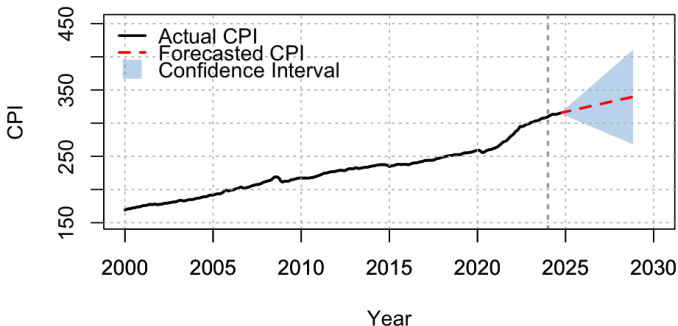
Figure: 60-Month CPI Forecast from 11/2024

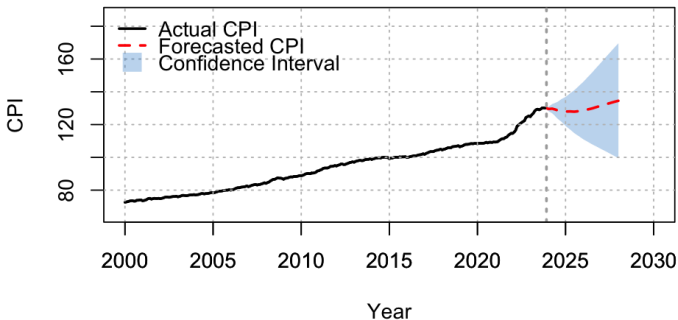**UK: Actual vs Forecasted CPI with Confidence Intervals**

Figure: 60-Month CPI Forecast from 11/2023

Summary

- There are many factors that cause inflation, but M1 is strongly correlated with the inflation rate.
- Inflation is the change in prices, but the rise in the price level is relatively permanent.
- The VAR model does a decent job at forecasting.
- Next Steps:
    - Testing it with other monetary measures or the monetary base as a whole.
    - Running different models to try and connect a causal link between the monetary base and CPI.